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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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03/31/2004

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EXAMINER

BITAR, NANCY

ART UNIT

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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/814,851	Applicant(s) COHEN ET AL.	
	Examiner NANCY BITAR	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,9-13,15,18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,3,9-13,15,18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/26/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's response to the last Office Action, filed 11/12/2007, has been entered and made of record.
2. Applicant has amended claims 1, 9, 13, and 18-19. Claims 1, 3, 9-13, 15, 18-19 are currently pending.
3. Applicants arguments filed 01/26/2009 with respect to claim 1, 3, 9-13, 15, 18-19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

4. Claim 1 is objected to because of the following informalities: Claim 1, line 1 teaches a stylizing" video" A spelling of the word video need to be corrected. Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the

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computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101.

... a signal does not fall within one of the four statutory classes of Sec. 101.

... signal claims are ineligible for patent protection because they do not fall within any of the four statutory classes of Sec. 101.

Claim(s) **13,15,18,19** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim **13** is drawn to functional descriptive material recorded on a “**computer-readable medium**”. Normally, the claim would be statutory. However, the specification paragraph [0092] defines the claimed computer readable medium as encompassing statutory media such as a “ROM”, “hard drive”, “optical drive”, etc, DVD as well as *non-statutory* subject matter such as a “modulated data signal” and “carrier wave”

A “signal” embodying functional descriptive material is neither a process nor a product (i.e., a tangible “thing”) and therefore does not fall within one of the four statutory classes of § 101. Rather, “signal” is a form of energy, in the absence of any physical structure or tangible material.

Because the full scope of the claim as properly read in light of the disclosure encompasses non-statutory subject matter, the claim as a whole is non-statutory. The examiner suggests amending the claim to include the disclosed tangible computer readable media, while at

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the same time excluding the intangible media such as signals, carrier waves, etc. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 9-13, 15, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable by Mittal et al (US 2005/0286764) in view of DeMenthon et al (Spatio-Temporal Segmentation of Video by Hierarchical Mean Shift Analysis, July 2002) further in view of Brook et al (US 7,432,940)

As to claim 1, Mittal teaches a method for stylizing video, comprising: performing a spatio-temporal segmentation analysis on the video to identify three dimensional volumes (optical flow computation, spatio-temporal domain, paragraph [0012]) of contiguous pixels having a similar color; receiving an interactive user input (paragraph [0188], user input, note that examiner interprets that the division based upon threshold established by a user shows that there is a user interface and thus the division is performed into blocks with respect to a user) identifying a group of the three dimensional volumes (forming a background model in a high-dimensional space, paragraph [0019]; wherein the three dimensional volumes of contiguous

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pixels comprise segments (apparatus for dividing the image into blocks, paragraph [0026]), Note that the optical flow constraint equation is applied at a given point defined by a spatial location and time to obtain respective constraints; applying an error function to combine the respective constraints from each the given point within a defined region for deriving a characteristic function; deriving a motion estimate from the characteristic function; and comparing the motion estimate with a given uncertainty model so as to derive a figure of uncertainty for optical flow measurement data, paragraph [0022], paragraph [0078]) wherein the interactive user input comprises outlining a plurality of segments While Mittal et al meets a number of the limitations of the claimed invention, as pointed out more fully above, Mittal fails to specifically teach the spatio-temporal segmentation having a similar color by mean shift analysis and outlining of plurality of segments . Specifically, DeMenthon et al. teaches the use of spatio temporal segmentation of video sequences by adopting a hierarchical clustering method, which operates by repeatedly applying mean shift analysis over increasingly high ranges and perform a 3D segmentation of the video stack where a foreground object is in front of a similar color background object. Moreover, DeMenthon teaches segment the spatio temporal pixel volume of the video stack with respect to feature component including color component, frame coordinates and optical flow components. DeMenthon teaches the region segmentation with respect to different features which include edges because the segmentation analysis of DeMenthon includes similar color segmentation and motion segmentation, and consistent labeling of regions over time which amounts to region tracking. It would have been obvious to one of ordinary skill in the art to use the spatio-temporal segmentation analysis with similar color in Mittal in order to provide a hierarchical

segmentation of data thus obtaining cleaner boundaries and help in video indexing and retrieval and a better video quality.

Brook et al teaches a user interface and the feature tracking function 1414 which makes use of input coordinates x , y , and f , as well as a video clip pointer or URL, in order to determine whether a characterized feature can be located within an expected range of movement from its original position in the frame number " f ". Brook clearly teaches the number of keyframes being fewer than a total number of frames of the video and additional segments on frames of the video other than keyframes are identified by determining a relationship of the additional segments to the segments outlined on the keyframes (see figure 18-19) Note that Examiner interpreted the sub clip 1 and sub clip 2 as additional segments on frames of the video (see figure 33). It would have been obvious to one skilled of the art to have the keyframes fewer than the total number of keyframes in order to achieve satisfying interpolated results in the in-between frames (sub clip frames) without the need of all the frames. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 3, Mittal teaches the method of claim 1, wherein the spatio-temporal segmentation analysis comprises an anisotropic kernel mean shift segmentation procedure (anisotropic non-linear filters can be considered, paragraph [0129])

to claim 9 and 10, Mittal teaches relationship comprises at least a portion of the additional segments being enclosed by one or more of the segments outlined on the keyframes and at least a portion comprises at least a majority of pixels of the additional segments (The method is able to capture the long term dynamic characteristics of the scene, temporal and

structural relationships between different pixels and multiple modalities of dynamic behavior, paragraph [0109], [0110] and see also DeMenthon (frame coordinate, pages 3-4) and see also Brooks et al (highlighting the tracking info are interpreted as the outline being highlighted).

As to claim 11, Mittal teaches the method of claim 1, further comprising applying a stylization to the single semantic region (note that a simple model keeps a single background image, paragraph [0046]).

As to claim 12, Mittal teaches the method of claim 11, wherein the stylization comprises a mean shift technique (The Variable Bandwidth Mean shift and Data-Driven Scale Selection, paragraph [0082])

7. Claims 13, 15, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mittal et al in view of DeMenthon et al and further in view of Collomosse et al (Stroke Surfaces: A spatiotemporal framework for temporally coherent non-photorealistic animations)

While Mittal and DeMenthon meets a number of the limitations of the claimed invention, as pointed out more fully above, None teaches deriving a set of edge sheets that represents the surface of the single semantic region and associating the edge sheets with the semantic region wherein a thickness of the edge sheets is determined based on criteria associated with the single semantic region and the criteria comprised a position of the edge sheet relative to an arc length of the edge sheet.

Specifically, Collomosse et al. teaches Video frames are segmented into homogeneous regions, and heuristic associations between regions formed over time to produce a collection of conceptually high level spatiotemporal objects. These objects carve sub-volumes through the video volume delimited by continuous isosurface “stroke surface” patches (section 1 and 2) it

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would have been obvious to one of ordinary skill in the art to use the edge sheet in order to produce animations exhibiting a higher degree of temporal coherence than current, temporally local video rendering algorithms. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041.

The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jingge Wu/
Supervisory Patent Examiner, Art Unit 2624

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